

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

1. (currently amended) An apparatus equalizing a histogram using a cumulative distribution function (CDF) of an image, the apparatus comprising:
 - a model parameter estimator capable of estimating the tone of the image by estimating mean and variance parameters from the image using a Gaussian model;
 - ~~an~~ Gaussian error function storing unit storing Gaussian error function values based on a Gaussian distribution;
 - a CDF calculator calculating a CDF using one of the Gaussian error function values from the Gaussian error function storing unit and the estimated mean and variance parameters; and
 - a histogram equalizer performing histogram equalization using the CDF calculated by using one of the Gaussian error function values from the Gaussian error function storing unit and the estimated mean and variance parameters.
2. (currently amended) The apparatus as recited in claim 1, further comprising a model parameter modifier modifying the estimated mean and variance parameters and outputting modified parameters to the CDF calculator.
3. (cancelled)
4. (currently amended) The apparatus as recited in claim 1, wherein the CDF calculator calculates the CDF using an Gaussian error function value from the Gaussian distribution comprising a zero mean and a unit variance.
5. (currently amended) The apparatus as recited in claim 1, wherein the Gaussian error function storing unit comprises a look-up table.
6. (currently amended) The apparatus as recited in claim 1, wherein the Gaussian error function storing unit stores the Gaussian error function values with a zero mean and a unit variance.

7. (currently amended) An apparatus equalizing a histogram using a cumulative distribution function (CDF) of an image, the apparatus comprising:

a model parameter estimator estimating parameters comprising mean and variance, from the image using a Gaussian model;

an Gaussian error function storing unit storing Gaussian error function values based on a Gaussian distribution with a zero mean and a unit variance;

a CDF calculator calculating a CDF using the parameters from the model parameter estimator and the Gaussian error function values from the Gaussian error function storing unit; and

a histogram equalizer performing histogram equalization using the CDF calculated by the CDF calculator using the parameters from the model parameter estimator and the Gaussian error function values from the Gaussian error function storing unit.

8. (currently amended) The apparatus as recited in claim 7, wherein the Gaussian error function storing unit comprises a look-up table.

9. (original) The apparatus as recited in claim 7, further comprising a model parameter modifier modifying the parameters, mean and variance, estimated by the model parameter estimator and outputting modified parameters to the CDF calculator.

10. (original) The apparatus as recited in claim 9, wherein the model parameter modifier modifies the mean to adjust brightness of the image and modifies the variance to adjust contrast of the image.

11. (currently amended) An apparatus equalizing a histogram using a cumulative distribution function (CDF) of an image, the apparatus comprising:

a model parameter estimator estimating parameters comprising mean and variance, from the image using a Gaussian model;

an Gaussian error function storing unit storing Gaussian error function values based on a Gaussian distribution;

CDF calculators calculating CDFs using the parameters from the model parameter estimator and the error function values from the Gaussian error function storing unit;

an image segmentation unit segmenting the image into subimages having a Gaussian distribution; and

histogram equalizers performing histogram equalization on the subimages provided from the image segmentation unit using the CDFs calculated by the CDF calculators using the

parameters from the model parameter estimator and the error function values from the Gaussian error function storing unit.

12. (original) The apparatus as recited in claim 11, further comprising model parameter modifiers modifying the parameters, estimated by the model parameter estimators and providing modified parameters to the CDF calculators.

13. (original) The apparatus as recited in claim 11, wherein the error function storing unit comprises a look-up table.

14. (original) The apparatus as recited in claim 12, wherein each of the model parameter modifiers modifies the mean to adjust brightness of the image and modifies the variance to adjust contrast of the image.

15. (currently amended) A method to equalize a histogram using a cumulative distribution function (CDF) of an image, the method comprising:
estimating mean and variance parameters from the image using a Gaussian model;
calculating a CDF using the mean and variance parameters and an Gaussian error function value; and
performing histogram equalization using the CDF.

16. (currently amended) The method as recited in claim 15, wherein the Gaussian error function value is based on a Gaussian distribution with a zero mean and a unit variance.

17. (cancelled)

18. (currently amended) The method as recited in claim 15, wherein the estimating the mean and variance parameters further comprises modifying the estimated parameters where the modified parameters are used to calculate the CDF.

19. (original) The method as recited in claim 15, further comprising segmenting the image into subimages, each subimage comprising Gaussian distributions,
wherein the CDF is calculated with respect to each of the subimages, and the histogram equalization is performed by applying the CDFs to the subimages.

20. (currently amended) A method to equalize a histogram using a cumulative distribution function (CDF) of an image, the method comprising:

estimating parameters comprising mean and variance, from the image using a Gaussian model;

storing Gaussian error function values based on a Gaussian distribution with a zero mean and a unit variance;

calculating a CDF using the parameters and the Gaussian error function values; and performing histogram equalization using the CDF calculated.